

TRAVEL TIME CALCULATIONS

Purpose of Travel Time Analysis

Travel time from various locations on Revillagigedo Island to various locations on Gravina Island was used as a means of characterizing the convenience and efficiency of access provided by each of the alternatives for the Gravina Access Project. Convenient and efficient access to Gravina Island are important concepts derived from the project's statement of purpose and need. Destinations on Gravina Island used in this analysis include private land and Ketchikan Gateway Borough land (i.e., lands presumably available for development or recreation) and the Ketchikan International Airport.

Trip Routes Used in the Travel Time Calculations

To characterize the convenience of access to Ketchikan International Airport, travel time calculations were made for vehicles traveling to the airport from the following seven locations:

1. Downtown Saxman, defined as the Saxman Fire Station. The area around this location represents approximately 13 percent of the population on Revilla.
2. Ketchikan's central business district (CBD), defined as milepost zero of Tongass Avenue (i.e., the federal building). The area around this location represents approximately 30 percent of the population on Revilla.
3. Carlanna Creek, the point at which approximately half of the Revilla population lives to the north and half of the population lives to the south, and the general location of the airport ferry/AMHS terminal and the Alaska Marine Line docks. The area around this location represents approximately 33 percent of the population on Revilla.
4. Ward Cove, which is represented by the location of the Ward Cove (U.S.) post office. The area around this location represents approximately 11 percent of the population on Revilla.
5. Point Higgins, defined as North Point Higgins Road at its intersection with Tongass Highway at approximately Milepost 14.1. The area around this location represents approximately 13 percent of the population on Revilla.
6. The Ketchikan General Hospital (3100 Tongass Avenue). Vehicles traveling from the hospital to the airport in this analysis were assumed to be ambulances.
7. The nearest fire station to the crossing (i.e., Pond Reef Road fire station for Options A and G1; Peninsula Point fire station for Options B, C3, and G2; the fire station across from the Alaska Marine Highway Terminal for the no action alternative and Options C1, C2, C3, D1, D2, E, E2, G3, and G4; and the Main Street fire station for Options F1, F1 Cable Stayed, F2, and F3). Vehicles traveling from the fire station to the airport in this analysis were assumed to be fire trucks and paramedic emergency response vehicles.



To characterize the efficiency and convenience of access to Borough lands and private lands on Gravina Island, travel time calculations were made for vehicles, pedestrians, and bicycles from the following three locations on Revilla:

1. Ketchikan's CBD (i.e., the federal building).
2. Carlanna Creek (airport ferry/AMHS terminal).
3. Ward Cove post office.

Method of Calculating Travel Time Over Hard Surface

The calculation of travel times is based on the length of the roadway that would be traveled and the average speed of the vehicles, pedestrians, and bicycles on that roadway. The average speed for vehicles was assumed to be 8 kilometers per hour (km/hr) [5 miles per hour (mph)] slower than the posted speed limit, except in the case of ambulances, fire trucks, and other emergency response vehicles for which the average speed was assumed to be the posted speed limit.

Vehicular Speed Assumptions Used in Travel Time Calculations

	Posted Speed Limit	Average Vehicular Speed Assumed	Emergency Response Vehicle Speed Assumed
Airport Access Road	30 mph/48 km/hr	25 mph/40 km/hr	30 mph/48 km/hr
Gravina Highway	50 mph/80 km/hr	45 mph/72 km/hr	50 mph/80 km/hr
Tongass Hwy: North of Airport Ferry Terminal	50 mph/80 km/hr	45 mph/72 km/hr	50 mph/80 km/hr
Tongass Hwy: North	25 mph/40 km/hr	20 mph/32 km/hr	25 mph/40 km/hr
Tongass Hwy: Downtown	20 mph/32 km/hr	15 mph/24 km/hr	20 mph/32 km/hr
Tongass Hwy: South	30 mph/48 km/hr	25 mph/40 km/hr	30 mph/48 km/hr
Tongass Hwy to Saxman	45 mph/72 km/hr	40 mph/64 km/hr	45 mph/72 km/hr

Note that the travel times are approximate and do not account for periods of traffic congestion. If travel time is used in a comparative analysis of alternatives in the NEPA document, travel time over hard surface will be refined to account for congestion on the affected roads during periods of peak traffic conditions. For pedestrians, the average speed was assumed to be 5 km/hr (3 mph) and for bicycles the average speed was assumed to be 16 km/hr (10 mph).

Method of Calculating Travel Time for Ferries

For the alternatives that include transportation via a ferry (i.e., No Action Alternative, and Options G1, G2, G3, and G4), the time for the ferry transit was included in the calculation. Travel times for the ferry trips include wait and load time, travel time, and unload time.



The ferry trip travel time for the No Action Alternative (No Build) is assumed to be 19 minutes. This value is based on a ferry survey (actual measurement, December 1999) of the existing ferry service. The 19 minutes of travel time includes 15 minutes of waiting, loading, and unloading time, and 4 minutes to transit Tongass Narrows.

Options G1, G2, and G3 add ferry service at new locations to compliment the existing ferry service. Under these options, both the existing and new ferries would be operational. Travel times were calculated for travel from all seven locations on Revilla (i.e., downtown Saxman, Ketchikan's CBD, Carlanna Creek, Ward Cove, Point Higgins, the hospital, and the nearest fire station) to Gravina Island (i.e., private land, Borough land, and the airport) using the new ferry.

We assumed that the waiting, loading, and unloading time for G1, G2, and G3 would be the same as for the No Build situation (i.e., 15 minutes). The transit time for the G1, G2, and G3 ferries (i.e., the amount of time it takes for the ferries to cross Tongass Narrows) was calculated based on the length of the crossing and an average ferry speed of 5.5 knots [10.19 km/hr (6.33 mph)].

Transit Time Calculations

	Ferry Speed		Crossing Distance		Duration of Crossing	Total Travel Time*
	<i>km/hr</i>	<i>mph</i>	<i>km</i>	<i>miles</i>	<i>minutes</i>	<i>minutes</i>
Option G1	10.19	6.33	2.82	1.75	16	31
Option G2	10.19	6.33	1.56	0.97	9	24
Option G3	10.19	6.33	1.11	0.69	7	22

* Includes 15 minutes of waiting, loading, and unloading time.

Option G4 adds new ferry service at the same location as the existing ferry service. Under this option, both ferries would be operational. The travel time calculations assumed that, with both ferries operating adjacent to each other, the ferry arrival/departure times would be staggered resulting in a shorter waiting time at the crossing. The waiting times were shortened by 3 minutes for all trips between Revilla and Gravina under Option G4.

Comparison of Travel Times for All Alternatives

Travel times for all alternatives are presented in the following tables. These tables show the travel time estimates for routes/trips measured in ascending order from shortest to longest travel time. Since the no action alternative would not provide access to Borough or private lands, it is excluded from the tables showing travel times to these lands from Ketchikan. For trips from Ketchikan to the airport, those alternatives that would result in improved travel times compared to the existing airport ferry are unshaded and appear above the no action alternative, and those that would result in longer travel times are shaded and appear below the no action alternative.

